

## 3D Flash LIDAR Megapixel High Speed Array, Phase I

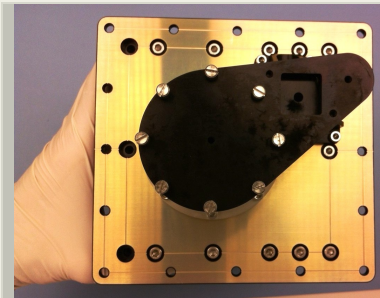
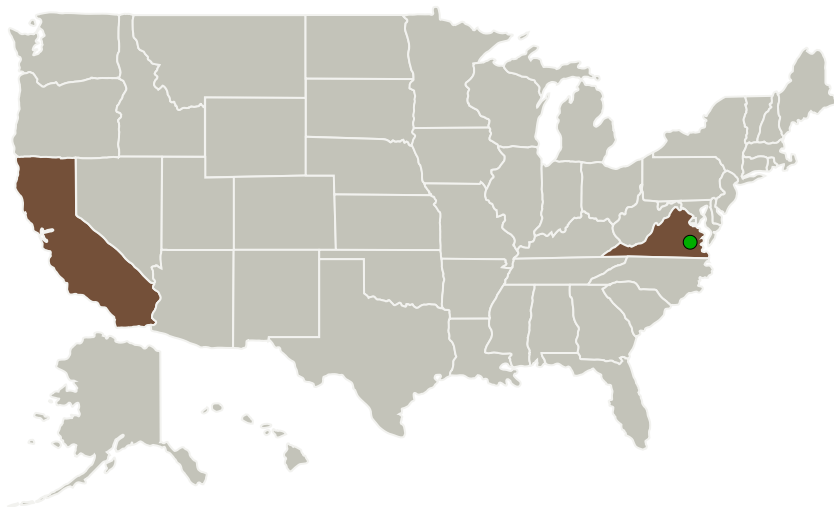
Completed Technology Project (2015 - 2015)



## Project Introduction

CMOS Fabrication processing improvements have become available that can shrink the unit cell size and increase the sample rates of 3D Flash LIDAR arrays allowing or significant improvement in both range and spatial resolution. ASC is proposing to design and simulate the architecture for a high speed (2 GHz) high resolution 3DFPA, running at nearly 5 times the current sample rate (430MHz) of the 128x128, and with compact pixel geometries scalable to 1 megapixel arrays. This effort would help to push the state of the art of Flash LIDAR from 128x128 3cm resolution arrays to 1024x1024 arrays with millimeter and possible sub-millimeter resolution. Flash LIDAR systems are 3D video cameras that capture an entire frame of data from a single pulse of light. Therefore, platform motion and vibration will not affect the measurements; furthermore this motion can be used to enhance the resolution of the sensor. This is not true for any other laser-ranging systems. Since Flash LIDAR is a time of flight system, the range maps are a direct real time data product. With no moving parts, the system is smaller, lighter, requires less power, and is more rugged, providing longer operational life than traditional approaches.

## Primary U.S. Work Locations and Key Partners



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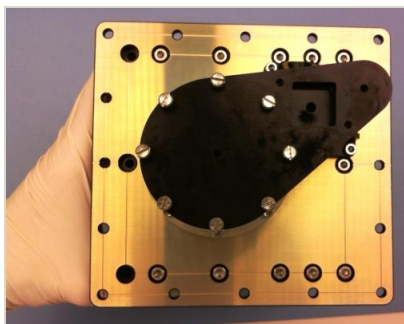
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Organizations Performing Work	Role	Type	Location
Advanced Scientific Concepts, Inc.	Lead Organization	Industry	Goleta, California
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
California	Virginia

## Images



## Briefing Chart Image

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(<https://techport.nasa.gov/image/129612>)

## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Lead Organization:

Advanced Scientific Concepts, Inc.

## Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

## Program Director:

Jason L Kessler

## Program Manager:

Carlos Torrez

## Principal Investigator:

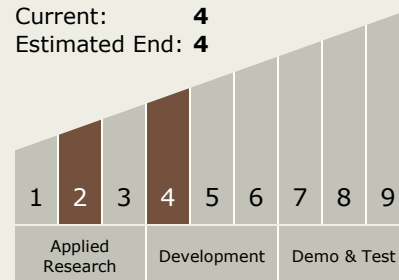
Brad Short

## Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4



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### Technology Areas

#### Primary:

- TX09 Entry, Descent, and Landing
  - └ TX09.4 Vehicle Systems
    - └ TX09.4.7 Guidance, Navigation and Control (GN&C) for EDL

### Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System